

AMENDMENTS TO THE CLAIMS

1-17 Canceled.

18. (previously presented) A method for computing a value, the method comprising:  
    providing data, a program of computable functions to describe computation of  
the value to be computed, and one or more uninstantiated variables;  
    encoding the program as a computable function;  
    continualizing the encoded program;  
    expressing the continualized, encoded program as a differential operator;  
    realizing the differential operator in a physical medium;  
    extracting from the physical medium a solution for the continualized, encoded  
program; and  
    outputting values for the one or more instantiated variables.

19. (previously presented) The method of claim 18 wherein uninstantiated variables  
further includes storing the computed value.

20. (previously presented) The method of claim 18 further includes compiling the data  
and program of computable functions in terms of an assembly code expressed from a  
set of discrete computable functions.

21. (previously presented) The method of claim 20 wherein encoding the program of  
computable functions further includes converting the assembly code into discrete  
partial recursive functions.

22. (previously presented) The method of claim 18 wherein continualizing the  
encoded program further includes:  
    determining an interpolating function;  
    parameterizing the interpolating function; and  
    transforming the parameterized interpolating function into a first-order, time-  
dependent, differential equation.

23. (previously presented) The method of claim 18 wherein expressing the continualized, encoded program as a differential operator further includes formulating a corresponding quantum canonical Hamiltonian operator.

24. (previously presented) The method of claim 23 wherein formulating the corresponding quantum canonical Hamiltonian operator further includes:

- formulating a problem Lagrangian;
- converting the problem Lagrangian into a problem Hamiltonian; and
- converting the problem Hamiltonian into the quantum, canonical Hamiltonian.

25. (previously presented) The method of claim 18 wherein instantiating the differential operator in a physical medium further includes converting the differential operator into an excitation field.

26. (previously presented) The method of claim 18 wherein extracting a solution for the continualized, encoded program further includes converting emitted radiation into a coherent spectrum of intensities and corresponding frequencies.

27. (previously presented) The method of claim 18 wherein outputting the instantiated variables further includes storing the computed value.

28. (previously presented) A system for computing a value, the system comprising:

- a control and scheduling system;
- a function input that converts a program of computable functions into an excitation field Hamiltonian;
- an excitation generator that instantiates the excitation field Hamiltonian into an excitation field;
- a quantum processor that converts the excitation field into emitted radiation;
- a transducer that converts the emitted radiation into a spectrum of intensity and corresponding frequency data; and
- coherent memory that stores and maintains a running average of the spectrum of intensity and corresponding frequency data.

29. (previously presented) The system of claim 28 wherein the control and scheduling system further includes iterated execution of the excitation generator, the quantum processor, and the transducer until the average spectrum of intensities converges to a constant value.

30. (previously presented) The system of claim 28 wherein the excitation field excites polymer fragment molecule nodes in the lattice of the quantum processor.

31. (previously presented) The system of claim 30 wherein the excited polymer fragment molecule nodes emit coherent radiation.

32. (previously presented) A quantum computer processor, the quantum computer processor comprising:

- a lattice of one or more polymer molecule nodes having four orthogonal sides;
- a first insulating boundary having a first end and a second end located along a first side of the lattice;
- a second insulating boundary having a first end and a second end located along a second side of the lattice and opposite the first side of the lattice;
- a first reflective plate fastened to the first ends of the first and second insulating boundaries and located along a third side of the lattice; and
- a second reflective plate fastened to the second ends of the first and second insulating boundaries located along a fourth side of the lattice opposite the third side of the lattice.

33. (previously presented) The apparatus of claim 32 wherein the nodes are polymer fragment molecules.

34. (previously presented) The apparatus of claim 32 wherein the one or more nodes are connected by one or more forward and lateral bonds.

35. (currently amended) The apparatus of claim 32 34 wherein the forward and lateral bonds are polymer fragment molecules.

36. (previously presented) The apparatus of claim 32 wherein the lattice is a two-dimensional planar arrangement of nodes.

37. (previously presented) The apparatus of claim 32 wherein the lattice is a three-dimensional arrangement of nodes.